CLAIMS

1. A measuring instrument for measuring an intensity of transmitted light or radiated light for each coloring matter when a sample mixed with a plurality of coloring matters is irradiated with light having different wavelengths, comprising:

a light source unit capable of irradiating the sample with the light having the different wavelengths; a light receiving unit that receives the transmitted light or the radiated light and outputs an electrical signal corresponding to the intensity of the received light; and a calculation section,

wherein the calculation section calculates the intensity of the transmitted light or the radiated light for each of the coloring matters using a correction coefficient that is calculated based on an electrical signal output by the light receiving unit when the light source unit irradiates each of a plurality of correction samples with light having a different wavelength from one another, each correction sample being mixed with one of the plurality of coloring matters and the respective mixed coloring matters being different from one another.

2. The measuring instrument according to claim 1, wherein

the sample is mixed with a plurality of fluorescent coloring matters having different excitation wavelengths as the coloring matters,

the light receiving unit receives fluorescence of the fluorescent coloring matters, and outputs an electrical signal corresponding to a fluorescence intensity of the received fluorescence, and

the calculation section calculates the fluorescence intensity of the fluorescence of each of the fluorescent coloring matters emitted from the sample using a correction coefficient that is calculated based on an electrical signal output by the light receiving unit when the light source

unit irradiates each of a plurality of correction samples, each correction sample being mixed with one of the plurality of fluorescent coloring matters and the respective mixed fluorescent coloring matters being different from one another, with light having a corresponding excitation wavelength of the plurality of fluorescent coloring matters.

3. The measuring instrument according to claim 2, wherein the correction coefficient is a matrix (a_{ij} (i=1, 2, ..., n; j=1, 2, ..., n)) satisfying Expression (23) :

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} & \cdots & a_{1n} \\ a_{21} & a_{22} & a_{23} & a_{24} & \cdots & a_{2n} \\ a_{31} & a_{32} & a_{33} & a_{34} & \cdots & a_{3n} \\ a_{41} & a_{42} & a_{43} & a_{44} & \cdots & a_{4n} \\ \vdots & \vdots & \vdots & \vdots & \vdots & \vdots \\ a_{n1} & a_{n2} & a_{n3} & a_{n4} & \cdots & a_{nn} \end{bmatrix} \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \\ \vdots \\ Y_n \end{bmatrix} = \begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \\ \vdots \\ X_n \end{bmatrix} \quad \cdots\cdots (23)$$

where the plurality of fluorescent coloring matters mixed in the sample are given numbers 1 to n, and when the light source unit irradiates the sample with light having an excitation wavelength of a k-th fluorescent coloring matter (k=1, 2, ..., n), an output value of the electrical signal output by the light receiving unit is represented by X_k, and a fluorescence intensity of the k-th fluorescent coloring matter is represented by Y_k, and

the calculation section substitutes the matrix (a_{ij}) and the output values X_1 to X_n into Expression (23) to calculate the fluorescence intensities Y_1 to Y_n as the fluorescence intensities of the fluorescent coloring matters.

4. The measuring instrument according to claim 3, having a light amount monitor that detects a light amount of light emitted by the light

source unit and outputs a signal to the calculation section,

wherein the calculation section corrects the output values X_1 to X_n or the matrix elements a_{11} to a_{nn} based on the signal output by the light amount monitor.

5. A fluorometric method for measuring a fluorescence intensity of fluorescence of each of a plurality of fluorescent coloring matters, the fluorescence being emitted from a sample mixed with the plurality of fluorescent coloring matters having different excitation wavelengths, by using a light source unit capable of emitting light having different wavelengths and a light receiving unit that receives the fluorescence of the fluorescent coloring matters and outputs an electrical signal corresponding to the fluorescence intensity of the received fluorescence, the method comprising:

calculating the fluorescence intensity of the fluorescence of each fluorescent coloring matter emitted from the sample using a correction coefficient,

wherein the correction coefficient is calculated based on an electrical signal output by the light receiving unit when the light source unit irradiates each of a plurality of correction samples, each correction sample being mixed with one of the plurality of fluorescent coloring matters and the respective mixed fluorescent coloring matters being different from one another, with light having a corresponding excitation wavelength of the plurality of fluorescent coloring matters.

6. The fluorometric method according to claim 5, wherein the correction coefficient is a matrix (a_{ij} ($i=1, 2, \ldots, n$; $j=1, 2, \ldots, n$)) satisfying Expression (24) :

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$$\begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} & \cdots & a_{1n} \\ a_{21} & a_{22} & a_{23} & a_{24} & \cdots & a_{2n} \\ a_{31} & a_{32} & a_{33} & a_{34} & \cdots & a_{3n} \\ a_{41} & a_{42} & a_{43} & a_{44} & \cdots & a_{4n} \\ \vdots & \vdots & \vdots & \vdots & \vdots & \vdots \\ a_{n1} & a_{n2} & a_{n3} & a_{n4} & \cdots & a_{nn} \end{bmatrix} \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \\ \vdots \\ Y_n \end{bmatrix} = \begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \\ \vdots \\ X_n \end{bmatrix}$$

where the plurality of fluorescent coloring matters mixed in the sample are given numbers 1 to n, and when the light source unit irradiates the sample with light having an excitation wavelength of a k-th fluorescent coloring matter (k=1, 2, ..., n), an output value of the electrical signal output by the light receiving unit is represented by X_k, and a fluorescence intensity of the k-th fluorescent coloring matter is represented by Y_k, and

the matrix (a_{ij}) and the output values X_1 to X_n are substituted into Expression (24) to calculate the fluorescence intensities Y_1 to Y_n as the fluorescence intensities of the fluorescent coloring matters.

7. The fluorometric method according to claim 6, wherein the output values X_1 to X_n or the matrix elements a_{11} to a_{nn} are corrected based on a light amount of light emitted by the light source unit.

8. A program for causing a computer to measure a fluorescence intensity of fluorescence of each of a plurality of fluorescent coloring matters, the fluorescence being emitted from a sample mixed with the plurality of fluorescent coloring matters having different excitation wavelengths using a light source unit capable of emitting light having different wavelengths and a light receiving unit that receives the fluorescence of the fluorescent coloring matters and outputs an electrical signal corresponding to the fluorescence intensity of the received fluorescence, the program comprising,

the step of calculating the fluorescence intensity of the

fluorescence of each fluorescent coloring matter emitted from the sample using a correction coefficient,

wherein the correction coefficient is calculated based on an electrical signal output by the light receiving unit when the light source unit irradiates each of a plurality of correction samples, each correction sample being mixed with one of the plurality of fluorescent coloring matters and the respective mixed fluorescent coloring matters being different from one another, with light having a corresponding excitation wavelength of the plurality of fluorescent coloring matters.

9. The program according to claim 8, wherein the correction coefficient is a matrix (a_{ij} (i=1, 2, ..., n; j=1, 2, ..., n)) satisfying Expression (25) :

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} & \cdots & a_{1n} \\ a_{21} & a_{22} & a_{23} & a_{24} & \cdots & a_{2n} \\ a_{31} & a_{32} & a_{33} & a_{34} & \cdots & a_{3n} \\ a_{41} & a_{42} & a_{43} & a_{44} & \cdots & a_{4n} \\ \vdots & \vdots & \vdots & \vdots & \vdots & \vdots \\ a_{n1} & a_{n2} & a_{n3} & a_{n4} & \cdots & a_{nn} \end{bmatrix} \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \\ \vdots \\ Y_n \end{bmatrix} = \begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \\ \vdots \\ X_n \end{bmatrix} \quad \cdots\cdots (25)$$

where the plurality of fluorescent coloring matters mixed in the sample are given numbers 1 to n, and when the light source unit irradiates the sample with light having an excitation wavelength of a k-th fluorescent coloring matter (k=1, 2, ..., n), an output value of the electrical signal output by the light receiving unit is represented by X_k, and a fluorescence intensity of the k-th fluorescent coloring matter is represented by Y_k, and

the matrix (a_{ij}) and the output values X_1 to X_n are substituted into Expression (25) to calculate the fluorescence intensities Y_1 to Y_n as the fluorescence intensities of the fluorescent coloring matters.

10. The program according to claim 9, wherein the output values X_1 to X_n or the matrix elements a_{11} to a_{nn} are corrected based on a light amount of light emitted by the light source unit.